

S.N.: 10/512,132
Art Unit: 2609

AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes a change to Figure 4, and replaces the original sheet of the drawing. In this Figure keys 135 and 136 have been labeled to indicate a direction arrow pointing southeast.

Attachment: Replacement Sheet 4/4

Annotated Sheet Showing Change 4/4

REMARKS:

This paper is herewith filed in response to the Examiner's Office Action mailed on May 16, 2007 for the above-captioned U.S. Patent Application. This office action is a rejection of claims 1-43 of the application.

More specifically, the Examiner has rejected claims 1-12 and 14-20 under 35 USC 102(b) as being anticipated by Levy (US5,973,621); rejected claims 21 and 22 under 35 USC 103(a) as being unpatentable over Levy in view of Prior (US2001/0044317); rejected claims 13, 23-40, and 43 under 35 USC 103(a) as being unpatentable over Levy in view of IBM Technical Disclosure Bulletin, September 1983, volume 26 issue 4; and rejected claims 41 and 42 under 35 USC 103(a) as being unpatentable over Levy in view of IBM Technical Disclosure Bulletin and in further view of Prior (US2001/0044317). The Applicant respectfully traverses the rejections.

Claims 1-43 have been amended for clarification. Claims 44-45 have been added. Support for the new claims may be found at least on page 4, line 4 to page 6, line 21. No new matter is added.

Regarding the rejection of claim 1 the Applicant disagrees with the rejection. Levy refers to a compact telephone keypad comprising a plurality of individual key caps 22. Levy discloses:

"Each interstice legend 10 is placed at the interstice 12 formed by the intersection of associated key caps 14. The term "associated key caps" 14 will be used throughout this document to refer to the set of individual key caps 22 which are designed to operate in unison and thereby inform the control electronics that the user intends the function identified by the interstice legend 10 located at the intersection of the associated key caps 14. In this embodiment each interstice legend 10 has four associated key caps 14 and each individual key cap 22 is sized such that each group of four associated key caps 14 are approximately comparable in size to a standard individual key cap 24, as shown in FIG. 3," (col. 5, line 65 to col. 6, line 11).

Claim 1 as amended recites:

A device comprising: a user input device comprising a plurality of sensors in an

array for tactile actuation by a user; a controller responsive to the actuation of a sensor by itself or the simultaneous actuation of a pair of adjacent sensors, **the controller being configured to produce one of a first set of control signals upon actuation of a sensor by itself, or one of a second set of control signals upon simultaneous actuation of an adjacent pair of sensors without simultaneous actuation of any of the other sensors**; and wherein each sensor of the array is associated with only one of the control signals of the first set and wherein each of the control signals of the second set is associated with an adjacent pair of sensors in the array, but not every one of the adjacent pairs of sensors is associated with a control signal of the second set.

In the rejection of claim 1 the Examiner refers to Fig. 7a of Levy. Levy discloses “Fig. 7a shows a plain view of the drawing of FIG. 6. A standard numeric keypad is implemented on the interstice legends 10 and the alphabet on the centre legends 45,” (column 7, lines 4 to 8).

The Applicant notes that the Examiner appears to equate the “first set of control signals” as in claim 1 to the input of an alphabetic character by pressing an individual key cap 22 in Levy, and the “second set of control signals” as in claim 1 to the input of a number by pressing four associated key caps 14 at an appropriate interstice in Levy.

It appears to the Applicant that the Examiner is considering that some of the interstice legends 10 in Levy do not relate to numbers and instead relate to the letters “Y” and “Z”, the symbols “*” and “#” and the function “Shift”. Further, the Examiner appears to apply this relationship in Levy to support anticipation of “each pair of adjacent sensors is not associated with a control signal of the second set” as in claim 1.

The Applicant notes that claim 1 has been amended to recite in part “the controller being configured to produce one of a first set of control signals upon actuation of a sensor by itself, or one of a second set of control signals upon simultaneous actuation of an adjacent pair of sensors without simultaneous actuation of any of the other sensors.”

Levy discloses a matrix 58 relating to a keypad. Levy discloses “If a key is down for three consecutive scans, it is considered valid. After this is detected, the microprocessor 56 then looks

to see if any of the adjacent keys are activated to decide whether it is single key or not. If the appropriate adjacent keys are activated, the "chorded" (combination) key is sent, otherwise the single key is sent," (col. 8, lines 31 to 36).

Thus, the microprocessor 56 in Levy appears to only distinguish between two possibilities: 1) activation of a single key, or 2) activation of a chorded combination (i.e. a four key combination). Consequently, Levy does not disclose a controller that is configured to produce "one of a second set of control signals upon simultaneous actuation of an adjacent pair of sensors without simultaneous actuation of any of the other sensors," as in claim 1.

Further, when discussing the use of the keypad device, Levy discloses:

"Because the legends of a sub-miniaturized keypad device are located at a distance significantly less than suggested by the human finger, it is easy for a finger to errantly strike a legend. By dividing each finger-sized area of a continuous key array into four switches, the information content has been distributed to an area commensurate with the human finger, significantly reducing the number of errant strikes," (col. 4, lines 45-51).

The Applicant contends that associating four keys in order to avoid errant strikes of a keypad as disclosed in Levy clearly conflicts with "a controller [...] configured to produce [...] one of a second set of control signals upon simultaneous actuation of an adjacent pair of sensors without simultaneous actuation of any of the other sensors," as in claim 1.

The Applicant contends for at least the reasons stated that Levy does not disclose or suggest claim 1. Further, as claim 45 recites language similar to claim 1 stated above, Levy does not disclose or suggest claim 45. In addition, for at least the reason that claims 2-12 and 14-20 depend from claim 1 Levy is not seen to disclose or suggest all the claims 1-12, 14-20, and 45.

Regarding the rejection of claims 13, 21 and 22 under 35 USC 103(a), the Applicant disagrees with the rejection.

The Applicant contends that even if the references cited were combined, which the Applicant does not agree is feasible or suggested, for at least the reasons already stated the combination would still not disclose or suggest claims 13, 21, and 22 which depend from claim 1 as stated above. Thus, the rejection should be removed and the claims allowed.

The Examiner has rejected claim 23 under 35 USC 103(a) as being unpatentable over Levy in view of the IBM Technical Disclosure Bulletin, September 1983, Volume 26, Issue 4. The Applicant respectfully disagrees with the rejection.

Claim 23 as amended recites:

“A method of providing N-way directional control using more than $N/2$ but less than N sensors in an array to provide N different directional control signals, wherein each of the N different directional control signals is a member of either a first set of directional control signals or a second, different, set of directional control signals, the method comprising: associating each one of the sensors in the array with only one directional control signal from the first set of directional control signals; associating each of the directional control signals of the second set with a pair of sensors in the array without associating each of the pairs of sensors in the array with a directional control signal of the second set; detecting when a sensor or sensors of the array are actuated; and providing the directional control signal associated with the detected actuated sensor(s).”

In the rejection the Examiner states:

“Regarding claim 23, Levy discloses a method of providing directional control using a force sensor to provide N different control signals (column 11 lines 13-46 figure 19-20b reference 112), wherein each of the N different control signals is a member of either a first set of control signals (directional) or a second different set of control signals (character), the method comprising: associating each the sensor in the array with all control signals from the first set; associating each of the control signals of the second set with a pair of sensors without associating each of the pairs of sensors with a control signal of the second set (characters); detecting when a sensor or sensors of the array are actuated; and providing the control signal associated with the detected actuated sensor(s) (column 11 lines 13-46 figures 19-20b reference 112).”

The Applicant notes that the Examiner has made reference to column 11, lines 13 to 46 of Levy. Here Levy refers to a pointing device 112 situated on a keypad. The Applicant further notes that

the Examiner appears to be arguing that “the first set of control signals” corresponds with directional control signals associated with the pointing device 112 and “the second set of control signals” corresponds with “characters” on the keypad. Presumably the Examiner is referring to the numbers 0 to 9 and the letters x, y and z in Fig. 19.

The Examiner has also admitted that Levy “does not disclose N different control signals using more than $N/2$ sensors but less than N.” Further, the Examiner states that “IBM does disclose a cursor control system involving N different control signals using more than $N/2$ sensors but less than N (figure 4).”

The Applicant contends that the references cited do not disclose or suggest “A method of providing N-way directional control using more than $N/2$ but less than N sensors in an array to provide N different directional control signals, wherein each of the N different directional control signals is a member of either a first set of directional control signals or a second, different, set of control directional signals” as in amended claim 23.

Additionally, given that amended claim 23 recites that the second set of control signals are “directional control signals”, the Examiner cannot consider them to correspond with the “character” control signals in Levy. Consequently, Levy also does not disclose or suggest “associating each of the directional control signals of the second set with a pair of sensors in the array, without associating each of the pairs of sensors in the array with a directional control signal of the second set” as recited in amended claim 23.

As indicated above, the Examiner has argued that the cited IBM Disclosure Bulletin document discloses “a cursor control system involving N different control signals using more than $N/2$ sensors but less than N”, referring to Figure 4 of the IBM document.

Claim 23 as amended recites in part “A method of providing N-way directional control using more than $N/2$ but less than N sensors in an array to provide N different directional control signals.” Whereas, Fig. 4 of the IBM document relates to 4-way directional control (see the

arrows on the keys pointing in the North, South, East and West directions).

The Applicant contends that if one were to compare claim 23 to Figure 4 of the IBM document, the “N” recited in claim 23 would need to be made equal to 4. This is because there is no disclosure or suggestion that the key arrangement in Fig. 4 of the IBM document can be used to provide anything other than 4-way directional control.

For example, there is no disclosure that an arrangement such as in Fig. 4 can be used to provide diagonal movement. See, for example, the first three lines of the IBM document, which disclose “Control of the position of a moving cursor on a CRT display has traditionally been via a layout called the block cursor control, as shown in Fig. 3, or the cursor control cross, as shown in Fig. 4. This disclosure shows an alternative layout in which diagonal movement can be added,” (emphasis added). The document then continues by discussing the Fig. 1 embodiment.

When comparing the Fig. 4 embodiment of the IBM document with claim 23, where N equals 4, the claim would relate to a method of providing 4-way directional control using more than 2 but less than 4 sensors in an array to provide 4 different directional control signals. However, Figure 4 of the IBM document does not disclose this, because 4 keys are used to provide 4-way directional control.

The Applicant contends that the IBM document does not, disclose or suggest “A method of providing N-way directional control using more than $N/2$ but less than N sensors in an array to provide N different directional control signals” as in claim 23. The Applicant respectfully requests that if the Examiner disagrees with the above interpretation, he provide in a non-final Office Action a clearer explanation in relation to the IBM document to support the rejection.

Further, the Applicant notes that Fig. 4 of the cited IBM document also does not disclose or suggest “associating each of the directional control signals of the second set with a pair of sensors in the array, without associating each of the pairs of sensors in the array with a directional control signal of the second set” as in claim 23.

The Applicant contends it is clear that neither Levy nor the IBM document provide any motivation for a person skilled in the art to develop anything that could disclose or suggest independent claim 23, because neither document relates to “providing N-way directional control using more than $N/2$ but less than N sensors in an array to provide N different directional control signals,” as in claim 23.

The subject-matter of independent claim 23 is therefore seen as novel and non-obvious in view of the disclosures made in Levy and the cited IBM document. The subject-matter of corresponding device claim 44 is seen as novel and non-obvious for the same reasons.

Regarding the rejection of claim 24 under 35 USC 103(a), the Applicant disagrees with the rejection.

Claim 24 recites:

“A device, for providing 8-way directional control, comprising a first set of sensors consisting of a first sensor adjacent a second sensor, constituting a first pair of sensors, and a third sensor adjacent the second sensor, constituting a second pair of sensors; and a second set of sensors, adjacent the first set of sensors, consisting of a fourth sensor adjacent a fifth sensor, constituting a third pair of sensors, and a sixth sensor adjacent the fifth sensor, constituting a fourth pair of sensors; wherein user actuation of a respective one of at least four of the six sensors provides for control in a respective one of four different directions and user actuation of each of the first, second, third and fourth pairs of sensors provides for control in a respective one of the remaining four different directions.”

In the rejection of claims 24 and 43 Examiner states that Levy discloses:

“A device, for providing 8-way directional control, comprising: a first set of sensors consisting of a first sensor adjacent a second sensor, constituting a first pair of sensors, and a third sensor adjacent the second sensor, constituting a second pair of sensors; and a second set of sensors, adjacent the first set of sensors, consisting of a fourth sensor adjacent a fifth sensor, constituting a third pair of sensors, and a sixth sensor adjacent the fifth sensor, constituting a fourth pair of sensors; [...] wherein user actuation of a respective one of at least four of

the six sensors provides for control in a respective one of four different directions.”

The Examiner has indicated that he is interpreting the first and second sensors, which constitute the first pair of sensors, to be switches s_{00} and s_{01} in Levy Fig. 10. The Examiner states that the same logic can be used to identify other switches that correspond with the other pairs of sensors recited in the claim.

The Examiner has also admitted that “Levy does not disclose wherein user actuation of a respective one of at least four of the six sensors provides for control in a respective one of four different directions and user actuation of a respective one of the first, second, third and fourth pairs of sensors provides for control in a respective one of the remaining four different directions”. However, the Examiner states that the cited IBM document discloses “user actuation of at least four of the five sensors provides for control in a respective one of the first, second, third and fourth pairs of sensors provides for control in a respective one of the remaining four different directions,” (emphasis added).

The emphasis added to the quotation above indicates how the Examiner has apparently misrepresented the language of claim 24 in the Office Action. In making reference to “five sensors” in the abovementioned section of the Office Action, the Examiner appears to be improperly equating the claims with Fig. 4 of the cited IBM document.

The Applicant notes that claim 24 as amended recites in part that “user actuation of a respective one of at least four of the six sensors provides for control in a respective one of four different directions and user actuation of each of the first, second, third and fourth pairs of sensors provides for control in a respective one of the remaining four different directions.”

The Applicant contends that there is no disclosure that the key arrangement of Fig. 4 of the IBM document can be used for anything in other than 4-way directional control and there is no disclosure of providing for any control by actuating pairs of sensors in the Fig. 4 arrangement.

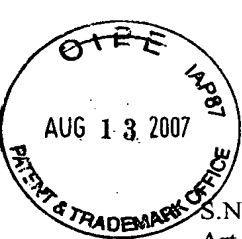
Also, the Applicant notes that none of the embodiments disclosed in the IBM document have any such four pairs of sensors. Therefore, the Applicant contends that the IBM document cannot be seen to disclose or suggest “user actuation of a respective one of at least four of the six sensors provides for control in a respective one of four different directions,” as in claim 24. Further, the Applicant contends that the IBM document clearly can cannot be seen to disclose or suggest “user actuation of each of the first, second, third and fourth pairs of sensors provides for control in a respective one of the remaining four different directions,” as in claim 24. This is at least because in the IBM document there is no “third pair of sensors” comprising a fourth sensor and a fifth sensor or a “fourth pair of sensors” comprising a fifth sensor and a sixth sensor, as in claim 24, which provide for control two of the remaining four different directions.

Furthermore, given that neither Levy nor the cited IBM document relate to a six sensor arrangement for providing 8-way directional control, for at least the reasons stated the Applicant contends that it is not foreseeable how a person skilled in the art could adapt the disclosures of Levy or the IBM document to develop to suggest claim 24.

In view of the above, the Applicant contends that the references cited can not be seen to disclose or suggest claim 24.

Further, as claim 43 recites language similar to claim 24 as noted above, the references cited are not seen to disclose or suggest all of claims 24 and 43. In addition, for at least the reason that claims 25-40, and 42 depend from claim 24, none of the claims 24-40, and 42-43 are seen to be disclosed or suggested by the references cited.

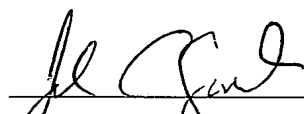
Based on the above explanations and arguments, it is clear that the references cited cannot be seen to disclose or suggest claims 1-45. The Examiner is respectfully requested to reconsider and remove the rejections of claims 1-45 and to allow all of the pending claims 1-45 as now presented for examination.



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For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Should any unresolved issue remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted:



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8/8/2007

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August 8, 2007 Clairine L. Mier

Date Name of Person Making Deposit



3/3

130						34		Movement
131	132	133	134	135	136	EN	INFO	Direction
	X					1	100	↑
				X		1	001	↓
X						1	010	←
			X			1	010	←
X			X			1	010	←
		X				1	101	→
					X	1	101	→
		X			X	1	101	→
X	X					1	110	↖
	X	X				1	011	↗
			X	X		1	111	↘
				X	X	1	000	↙
X	X	X				1	100	↑
			X	X	X	1	001	↓
						0		
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- Other Permutations -								